

Calculation of porosity of sample described in Example 1 of patent US 4613535

Given in example 1:

Weight % Fiber:	Φ_f	0.727
Areal density of pressed plate: (AD)	AD	8.53 kg/m ²
Thickness of pressed plate	T	0.36 inch = 0.00914 m

Densities of constituents:

PE fiber	ρ_{PE}	975 kg/m ³
Kraton D1107	ρ_{KR}	940 kg/m ³

Density of composition without voids:

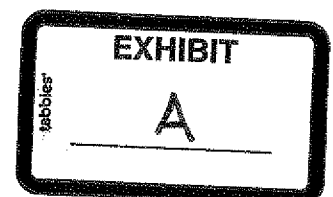
$$\rho_{NO_VOID} = 1/(\Phi_f / \rho_{PE} + (1 - \Phi_f) / \rho_{KR}) = 965.2 \text{ kg/m}^3$$

True density of composition in example 1:

$$\rho_{TRUE} = AD/T = 932.9 \text{ kg/m}^3$$

Porosity of composition in example 1:

$$\rho_{NO_VOID} / \rho_{TRUE} - 1 = 0.0335 = 3.35\%$$



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Product specification sheet: technical information

General information

Product: Stamylex – dense polyethylene film

Description:

Application:

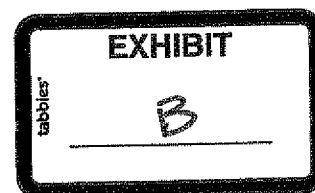
Typical properties:

Note:

Technical data (typical values)

Property		Typical value
Thickness		0.007 mm
Weight		6.5 g/m ²
Elmendorf tear resistance (ASTM D1922)	TD	70 g/μ

MD = machine direction
TD = transversal direction



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— Product Data Sheet —

Solupor®: 3P07A

Microporous Polyethylene Film

Features

Thin, highly porous film with high pore size.

Applications

Substrate film for composite membranes (example : PEMFC)

Chemical Composition

Polymer

(Ultra) High Molecular Weight Polyethylene

General Properties

	Value	Unit	Test Method
Total Weight per Surface Area	3.0	g/m ²	MV 001
Thickness	20	µm	MV 002
Porosity	83	%	MV 001
Air Permeability, Gurley number	1.4	s/50 ml	MV 006
Mean Flow Pore Size	0.7	µm	MV 003

Additional Properties

	Value	Unit	Test Method
Tensile Strength			
@ Machine Direction	12	MPa	MV 010
Elongation at Break			
@ Machine Direction	13	%	MV 010
Dimensional Changes			
@ 80 °C			
- Machine Direction	< 2	%	MV 009
- Transverse Direction	< 3	%	MV 009

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EXHIBIT**C**